Prepolarized ½" Sound Intensity Microphone Pairs Types 40GI and 40GK

Product Data

Typical Applications

- · Sound intensity measurements
- · Sound power measurements
- · Sound source localization
- IEC 61043 Standard instrumentation

Typical Applications

· Class 1 Intensity Microphones

Description

The G.R.A.S. Sound Intensity Microphone Pairs Types 40Gl and 40GK (Fig. 1) are matched pairs of free-field microphones with extremely well-controlled phase characteristics for use in sound intensity probes. The Sound Intensity Microphone Pair Type 40Gl consists of two phase-matched, ½" prepolarized condenser microphones. The Sound Intensity Microphone Pair Type 40GK is similar, but it also includes adapters for G.R.A.S. CCP ½" Preamplifiers Type 26CB and solid spacers for 12 mm, 25 mm, 50 mm, and 100 mm intensity-probe configurations.

These intensity microphones are part of G.R.A.S.' full range of condenser microphones. They are a recent generation of precision measurement microphones with improved performance and long term stability. Their design is based on more than 40 years of experience and utilizes the advantages of new high-tech materials and machining techniques. They comply with the requirements of the international standard IEC 1094 Measurement Microphones, Part 4: Specifications for working standard microphones and their mounting threads (11.7 mm 60 - UNS-2) are compatible with all the usual available makes of measurement-microphone preamplifiers.



Fig. 1 Intensity-microphone Pair Type 40GK with adapters and a spacer. Below: Intensity-microphone Pair Type 40GI

Phase Match

The most important feature of a sound intensity probe is its ability to measure the real part of a complex sound intensity in highly reactive sound fields as well as in sound fields exposed to high levels of background noise. This ability depends largely on the phase responses of the pair of intensity microphones. For high-quality pairs, the difference in phase responses must be extremely small. The pair of microphones of the Type 40Gl comply with the phase specifications for a Class 1 Sound Intensity Probe in accordance with international IEC 61043, Electroacoustics - Instruments for the Measurement of Sound Intensity - Measurements with Pairs of Pressure Sensing Microphones, 1993.

The phase difference between the two microphones of a Type 40Gl pair is less than 0.05° in the range 20 Hz - 250 Hz and less than (f/5000)° at frequencies above 250 Hz, where f is the frequency in Hz. This has been obtained while still maintaining the high sensitivity.



Frequency Range

Type 40GK includes four spacers (12 mm, 25 mm, 50 mm, and 100 mm) which make it possible to measure sound intensity in the frequency range 20 Hz - 10 KHz according to IEC 61043 Class 1.

Sensitivity

The high open-circuit sensitivity of the microphones, typically 12.5 mV/Pa re. 20 μ Pa makes it feasible to measure signals as low as 27 dB and as high as 160 dB.

Calibration

These microphones have a uniquely-designed pressure equalization system that ensures a well-defined lower limiting frequency and an extremely low sensitivity to sound pressure at the pressure-equalization channel. This results in precise phase characteristics and allows the microphones to be phase-calibrated in a single-port calibrator such as the G.R.A.S. Sound Intensity Calibrator Type 51AB.

Materials

High-quality materials such as non-corrosive, stainless steel is used in manufacturing these microphones to enable them to withstand rough handling and corrosive environments.

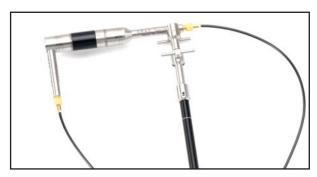


Fig. 2 Sound-intensity Microphone Pair with 25-mm spacer mounted on Intensity Probe Type 50GI

Warranty

All G.R.A.S. microphones are guaranteed for 5 years and are individually checked and calibrated before leaving the factory.

Sound-Intensity Probe

The Type 40GK is included in the G.R.A.S. CCP Sound Intensity Probe Type 50GI (Fig. 2) together with preamplifiers Type 26CB, probe handle, and an adjustable swivel-head mount for microphones.



Technical Data

Open-circuit sensitivity:	Influence of axial vibrations, 1 m/s ² :
12.5 mV/Pa ±1.5 dB	66 dB re. 20 μ Pa
Polarization voltage:	Influence of magnetic fields: 34 dB re. 20 µ Pa at 50 Hz, 80 A/m
Free-field frequency response (as a pair in a probe): According to IEC 61043 1993 Class 1 and IEC 60651 Type 1 from 20 Hz to 10 kHz 1 Hz - 20 kHz ± 2.0 dB 2 Hz - 18 kHz	Intensity-probe configuration specifications Sound Intensity Microphone Pair Type 40GI fulfils the phase requirements of a Class 1 Sound Intensity Probe in accordance with IEC International Standard 61043.
Resonant frequency:	Difference in phase response:
12 kHz Lower-limiting frequency, -3 dB:	From 50 Hz to 250 Hz < 0.05° From 250 Hz to 6.3 kHz < (f/5000)°
1 Hz	Difference in amplitude response:
Polarized cartridge capacitance at 250Hz: 14 pF	(normalised at 250 Hz) From 20 Hz to 1 kHz < 0.2 dB From 20 Hz to 5 kHz < 0.4 dB
Inherent cartridge noise: < 23 dBA re. 20 µ Pa	Difference in sensitivity at 250 Hz:
Upper limit of dynamic range:	< 1dB
154 dB re. 20 μ Pa (< 1% THD at 100 Hz)	Dimensions: Length: 12.5 mm Diameter: 13.2 mm
Temperature coefficient at 250 Hz:	
From -0 °C to +50 °C0.015 dB/°C	Preamplifier mounting thread: 11.7 mm - 60 UNS
Ambient pressure coefficient at 250 Hz: -0.008 dB/hPa	Weight:
Humidity coefficient:	6 g
<-0.2 dB/100% RH	

Accessories

Accessories included with Type 40GK: Solid spacers for microphone separation: 12 mm, 25 mm, 50 mm and 100 mm Adapters, ½" to ¼": Straight RA0003 Right-angled (2)	Optional Accessories for Type 40GK: Sound Intensity Calibrator Type 51AB
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G.R.A.S. Sound & Vibration reserves the right to change specifications and accessories without notice.

